

**Notice of Allowability**

Application No.

09/643,017

Examiner

ABUL K. AZAD

Applicant(s)

THYSSEN, JES

Art Unit

2654

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the communication filed on.
2. ☒ The allowed claim(s) is/are 8,20,22,28,32,38,40 and 46.
3. ☒ The drawings filed on 21 August 2000 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All   b) ☐ Some\*   c) ☐ None   of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

A-K. Azad  
11/19/05

## **DETAILED ACTION**

### ***Response to Amendment***

1. This action is in response to the communication filed on November 26, 2004.
2. Claims 8, 11, 20, 22, 24-28, 30, 32-38, 40-46 and 48-51 are pending in this action. Claim 48 has been amended. Claims 49-51 have been newly added.

### ***Examiner's Amendment***

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Farshad Farjami (Reg. No. 4,1014) on January 17, 2005.

The application has been amended as follows:

IN THE CLAIM:

Claims have been amended as follows:

Claims 1-7 have been canceled.

8. A method for classifying a speech signal having a background noise portion with a background noise level, the method comprising the steps of:
  - extracting a parameter from the speech signal;
  - estimating a noise component of the parameter;

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removing the noise component from the parameter to generate a noise-free parameter;

selecting a pre-determined threshold, wherein the step of selecting said pre-determined threshold is unaffected by said background noise level;

comparing the noise-free parameter with a said pre-determined threshold; and

associating the speech signal with a class in response to the comparing step;

wherein the extracting steps extracts a plurality of parameters and the steps of estimating, removing, selecting, comparing and associating are performed for each of the plurality of parameters, wherein the plurality of parameters include a spectral tilt parameter, a pitch correlation parameter and an absolute maximum parameter, and wherein said spectral tilt parameter is weighted to generate a noise-free spectral tilt parameter during the step of removing, said pitch correlation parameter is weighted to generate a noise-free pitch correlation parameter during the step of removing and said absolute maximum parameter is weighted to generate a noise-free absolute maximum parameter during the step of removing.

Claims 9-19 have been canceled

20. A method for processing a speech signal having a background noise portion with a background noise level, the method comprising the steps of:

extracting a set of speech parameters from the speech signal;

forming a set of noise-free parameters based on the speech parameters;

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selecting a pre-determined set of thresholds, wherein the step of selecting said pre-determined set of thresholds is unaffected by said background noise level;

comparing each of the noise-free parameters with each corresponding threshold of a said pre-determined set of thresholds; and

classifying the speech signal based on the comparing step;

wherein the speech parameters include a spectral tilt parameter, a pitch correlation parameter and an absolute maximum Parameter, and wherein said spectral tilt parameter is weighted to generate a noise-free spectral tilt parameter during the step of forming, said pitch correlation parameter is weighted to generate a noise-free pitch correlation parameter during the step of forming and said absolute maximum parameter is weighted to generate a noise-free absolute maximum parameter during the step of forming.

Claim 21 has been canceled

Claims 23-27 have been canceled

28. The method of claim [27] 8, wherein weighting the parameter includes subtracting background noise contribution.

Claims 29-31 have been canceled

32. A speech coding device for classifying a speech signal having a background noise portion with a background noise level, the speech coding device comprising:

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a parameter extractor module configured to extract a parameter from the speech signal to be used for classifying the speech signal;

a noise estimator module configured to estimate a noise component of the parameter;

a noise removal module configured to remove the noise component from the parameter to generate a noise-free parameter;

a comparator module configured to compare the noise-free parameter with a pre-determined threshold, wherein said pre-determined threshold is unaffected by said background noise level; and

a classification module configured to associate the speech signal with a class in response to the comparator module;

wherein the parameter extractor module extracts a plurality of parameters and the noise estimator module, the noise removal module, the comparator module and classification module associating operate on each of the plurality of parameters, wherein the plurality of parameters include a spectral tilt parameter, a pitch correlation parameter and an absolute maximum parameter, and wherein the noise removal module weights said spectral tilt parameter to generate a noise-free spectral tilt parameter, the noise removal module weights said pitch correlation parameter to generate a noise-free pitch correlation parameter and the noise removal module weights said absolute maximum parameter to generate a noise-free absolute maximum parameter.

Claims 33-37 have been canceled

38. The speech coding device of claim [37] 32, wherein weighting the parameter includes subtracting a background noise contribution.

Claim 39 has been canceled

40. A computer program product for classifying a speech signal having a background noise portion with a background noise level, the computer program product comprising:

- code for extracting a parameter from the speech signal;
  - code for estimating a noise component of the parameter;
  - code for removing the noise component from the parameter to generate a noise-free parameter;
  - code for selecting a pre-determined threshold, wherein selection of said pre-determined threshold is unaffected by said background noise level;
  - code for comparing the noise-free parameter with a said pre-determined threshold; and
  - code for associating the speech signal with a class in response to the code for comparing;
- wherein the code for extracting steps extracts a plurality of parameters and the code of estimating, removing, selecting, comparing and associating are performed for

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each of the plurality of parameters, and wherein the plurality of parameters include a spectral tilt parameter, a pitch correlation parameter and an absolute maximum parameter, and wherein the code for removing weights said spectral tilt parameter to generate a noise-free spectral tilt parameter, the code for removing weights said pitch correlation parameter to generate a noise-free pitch correlation parameter and the code for removing weights said absolute maximum parameter to generate a noise-free absolute maximum parameter.

Claims 41-45 have been canceled

46. The computer program product of claim [45] 40, wherein the code for applying weighting includes code for subtracting a background noise contribution.

Claims 47-51 have been canceled.

***Allowable Subject Matter***

4. Claims 8, 20, 22, 28, 32, 38, 40 and 46 are allowed over the prior art of record.

5. The following is an examiner's statement of reasons for allowance:

As per independent claims 8, 20, 32 and 40, the applicant teaches a method/a speech coding device/a computer program product for classifying/ processing a speech signal having a background noise portion with a background noise level. The prior art of record fails to teach or fairly suggest the claimed combinations of features. Prior art of

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record fails to teach or fairly suggest claimed combination features of extracting a spectral tilt parameter, a pitch correlation parameter and an absolute maximum parameter from speech signal, estimating a noise component of each of the parameters, removing the noise component from the each of the parameters to generate a noise free-parameter and comparing the each of the noise-free parameter with a pre-determined threshold to classify and code the speech signal.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

#### ***Contact Information***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Abul K. Azad** whose telephone number is **(703) 305-3838**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richemond Dorvil**, can be reached at **(703) 305-9645**.

Any response to this action should be mailed to:

**Commissioner for Patents**

**P.O. Box 1450**

**Alexandria, VA 22313-1450**



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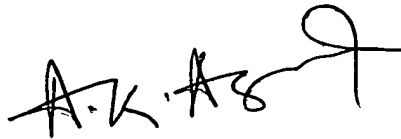
Or faxed to:

**(703) 872-9314**

(For informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to 2121 Crystal Drive, Arlington,  
VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should  
be directed to the Technology Center's Customer Service Office at telephone number  
**(703) 306-0377.**

A handwritten signature in black ink, appearing to read 'A.K. Azad', with a stylized flourish at the end.

Abul K. Azad

January 23, 2005